

Inorganic Chemistry

A STUDY AND SYNTHESIS OF CONJUGATED TUNGSTEN DIMERS WITH VARYING LIGANDS. Jeffrey S. Mugridge. Dr. Michael D. Hopkins*. University of Chicago, Department of Chemistry, 5735 S. Ellis Ave, Chicago IL 60637. mhopkins@uchicago.edu

Linear, conjugated molecules of the form $XW(L_4)CCW(L_4)X$ have great potential as building blocks in the area of nano-scale technology, due to their unique electronic and photophysical properties. By varying the ligands (L) on each metal center, we can change these electronic properties. Here we report the synthetic chemistry and characterization behind several such molecules. These include the molecules $CIW(CO)_2L_2CCW(CO)_2L_2Cl$ (where $L = dmpe, depe$) and $CIW[P(OMe)_3]_4CCW[P(OMe)_3]_4Cl$. For this class of compounds a similar synthetic route is used to arrive at each molecule. Phosphorous, carbon and proton NMR as well as X-ray crystallography are used to characterize each molecule. From this data we can make interesting conclusions concerning how these tungsten dimers differ from the corresponding, previously studied monomers as well as how changing the ligands on these dimers (for example chelating vs. non-chelating ligands) effects the molecule's properties and stability. Finally, it is apparent that this new synthetic route could potentially be used to arrive at other analogues of these molecules.